

## **\$TITLE\$**

### **Fall Freeze-up of Sea Ice in the Beaufort-Chukchi Seas Using ERS-1 SAR and Buoy Data**

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The lowering of air temperatures below freezing in the fall indicates the end of summer melt and the onset of steady sea ice growth. The thickness and condition of ice that remains at the end of summer has ramifications for the thickness that that ice will attain at the end of the following winter. This period also designates a shifting of key fluxes from upper ocean freshening from ice melt to increased salinity from brine extraction during ice growth.

This transitional period has been examined in the Beaufort and Chukchi Seas using ERS-1 SAR imagery and air temperatures from drifting buoys during 1991 and 1992. The SAR imagery is used to examine the condition and types of ice present in this period. Much of the surface melt water has drained off at this time. Air temperatures from drifting buoys coincident in time and within 100 km radius of the SAR imagery have been obtained. Using radar signatures of the ice, it was found that there are considerable variations in the returns with air temperature excursions above and below freezing in late August as ice surface was either wet or dry. However, when the air temperatures remain steadily below freezing in September, the ice obtains a signature that is very stable, which is maintained essentially throughout the winter period. The variations and stabilization of the ice signatures have been examined both temporally and spatially with these comparison data sets.

This work has been performed at the Jet Propulsion Laboratory, California Institute of Technology, and the Applied Physics Laboratory, University of Washington, under contract with the National Aeronautics and Space Administration.

## **\$INFO\$**

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